# Upgrading to ESXi 5.0 using Dell Customized VMware ESXi images

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# Introduction

VMware® vSphere™ 5 uses the power of virtualization to help transform data centers into simplified cloud infrastructures, using ESXi 5.0, the latest in the series of thin virtualization hypervisors being introduced by VMware. Together, Dell and VMware deliver efficient virtual infrastructure solutions that are fast to deploy and easy to manage. Unlike prior versions, vSphere 5 supports only the ESXi hypervisor architecture. In order to benefit from the unique capabilities and features of vSphere 5 and ESXi 5, Dell recommends its customers to migrate existing ESX/ESXi deployments to ESXi 5 and upgrade deployments of vSphere 4.x or older to vSphere 5.

This document talks about best practices to consider before migrating to VMware ESXi 5.0 from older ESX/ESXi versions. This includes migrating from VMware provided and Dell customized VMware ESXi 4.x branches.

# Audience and Scope

The intended audience for this whitepaper includes IT Administrators and channel partners who plan to migrate from existing VMware ESX/ESXi servers to vSphere 5.0. By using Dell customized images, the effort required to upgrade the datacenter may be reduced.

# What's Dell Customization of VMware ESXi?

Dell customization of the ESXi image is all about including new or updated VMware IOVP certified drivers and third party CIM providers[1] into the ESXi. The Dell customized ESXi images are certified by Dell through VMware's program for OEM customization. In addition to the drivers and providers, Dell's technical support information is updated via OEM customization process. Currently, the Dell-customized ESXi Embedded ISO images for ESXi4.x and ESXi 5.0 do not include Dell OpenManage Server Administrator. For detailed instructions to install and use Dell OpenManage Server Administrator, refer *'Software → Systems Management'* section @ *Dell OpenManage documentation*. To know the specific details of the driver and provider versions integrated in different Dell customized images, Refer *'Dell Customization of the ESXi image'* at Dell support website. To download the Dell customized VMware ESXi 4.x and 5.0 images, go to Dell support website (Go to http://support.dell.com → Select 'Support for Enterprise IT' →Go to 'Drivers and Downloads' → *'Enter Service tag'* or select *'Choose from a list of all Dell products'* option → Select *'Servers, Storage, & Networking'* option → Select *'PowerEdge'* → Select the system as per your configuration → Once the system is selected, Select the *'Operating System'* as ESXi 4.x or ESXi 5.0 as per your requirement → Click 'Enterprise Solutions' sub tab → The ISO image is listed there).

## Migrating to ESXi 5.0

The upgrade process from VMware ESX/ESXi 4.x to ESXi 5.0 preserves as much of the ESXi host configuration as possible. This document talks about few best practices to be considered before you migrate from a Dell customized VMware ESX/ESXi 4.x image to Dell Customized VMware ESXi 5.0/VMware provided ESXi 5.0.

The general pre-requisites to be considered while migrating to VMware ESXi 5.0 are documented at http://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html. Refer *'vSphere Upgrade Guide'* document in the above link to know step by step migration to VMware ESXi 5.0 from previous versions. In addition to the pre-requisites mentioned in the links, there are few more things to be considered w.r.t Dell Customized image which are mentioned as below

1 Third party CIM provider inclusion will be discontinued from upcoming versions of Dell Customized VMware ESXi images

## Migration from vSphere 4.x to vSphere 5.x

When upgrading to ESXi 5.0, an important factor to be considered, is the difference in the image contents. You are bound to see some warning/error messages during the migration process due to the change in the image contents between 4.x and 5.0. Here are some of the scenarios you may come across during migration from 4.x to 5.0

- **Scenario 1: Migration from VMware provided ESXi 4.x image to VMware provided ESXi 5.0**

To upgrade from VMware provided ESXi 4.x to VMware provided ESXi5.0, you will come across an upgrade/install window as shown below (Refer Fig1). This is a straight forward scenario where you see 3 options in which *'Upgrade ESXi, Preserve VMFS datastore'* needs to be used for upgrade.

ESXi and VMFS Found
The selected storage device contains an installation of ESXi and a VMFS datastore. Choose whether to upgrade or install and overwrite the existing ESXi installation. Also choose whether to preserve or overwrite the existing VMFS datastore.
(X) Upgrade ESXi, preserve VMFS datastore
( ) Install ESXi, preserve VMFS datastore
( ) Install ESXi, overwrite VMFS datastore
Use the arrow keys and spacebar to select an option.
(Esc) Cancel
(Enter) OK

**Fig1:** Screen capture taken during migration from VMware provided ESXi 4.1 Update1 to VMware provided ESXi 5.0.

- **Scenario 2: Migration from VMware provided ESX 4.x Classic image to VMware provided / Dell Customized ESXi 5.0**

In this case there is a slight change in the term which is used while upgrading from a classic 4.x branch to VMware provided / Dell Customized VMware ESXi 5.0. Instead of *'Upgrade ESXi, preserve VMFS datastore'*, it does show *'Migrate ESX, preserve VMFS datastore'*. The important point to be considered here is that the COS (Console Operating System) available in 4.x branch will be removed after migrating to ESXi 5.0. All applications (Including Dell OpenManage) installed on classic 4.x will be removed during migration. Hence, prior to proceeding with migration, make sure to backup the required data in COS. The OpenManage software installed on COS needs to be reinstalled with the package supported for ESXi 5.0.

ESX and VMFS Found
The selected storage device contains an installation of ESX and a VMFS datastore. Choose whether to upgrade or install and overwrite the existing ESX installation. Also choose whether to preserve or overwrite the existing VMFS datastore.
* Since you are upgrading from ESX to ESXi, only the relevant settings will be migrated as part of the migration.
(X) Migrate ESX, preserve VMFS datastore *
( ) Install ESXi, preserve VMFS datastore
( ) Install ESXi, overwrite VMFS datastore
Use the arrow keys and spacebar to select an option.
(Esc) Cancel
(Enter) OK

**Fig2**: Screen capture taken during migration from VMware provided ESX 4.1 Update1 to VMware provided / Dell Customized ESXi 5.0

- **<u>Scenario 3: Migration from Dell customized VMware ESXi 4.1 Update1 image to VMware provided ESXi 5.0:-</u>**

ESXi and VMFS Found
The selected storage device contains an installation of ESXi and a VMFS datastore. Choose whether to upgrade or install and overwrite the existing ESXi installation. Also choose whether to preserve or overwrite the existing VMFS datastore.
* Your system has custom VIBs (shown on next screen). Proceeding with migration could cause it to not boot, experience instability, or needed features may not be present. You can use ImageBuilder to create an ISO with VIBs that replace your custom VIBs.
(X) Force Migrate ESXi, preserve VMFS datastore *
( ) Install ESXi, preserve VMFS datastore
( ) Install ESXi, overwrite VMFS datastore
Use the arrow keys and spacebar to select an option.
(Esc) Cancel
(Enter) OK

**Fig3**: Screen capture taken during migration from Dell Customized VMware ESXi 4.1 update1 to VMware provided ESXi 5.0

In the case of migration from Dell Customized VMware ESXi 4.1 Update1 to VMware provided ESXi 5.0, you will see the option *'Force Migrate ESXi'* instead of *'Upgrade ESXi'* (Refer **Fig3**) The reason is because some of the driver versions or configurations, available as part of Dell Customized VMware ESXi 4.1 Update1 image, are not present in VMware provided ESXi 5.0. This option informs the end user that the current install has custom VIBs and proceeding with the migration may make the system unstable. As an example the instability refers to making the system not able to use a device where the proper driver is not present after migration. Considering this, Dell recommends to upgrade from Dell customized VMware ESXi 4.x to ESXi 5.0 using latest Dell Customized VMware ESXi 5.0 image.

Warning Information similar to the below screen capture is shown (Refer **Fig4**) when you enter into the option 'Force Migrate ESXi, preserve VMFS datastore'. This shows packages which are present in Dell customized VMware ESXi 4.1 Update1 but not present in the image

used for migration to ESXi 5.0. If you select this option, keep in mind that functionalities for some of the cards present in the system may be lost due to the driver unavailability if any. However you can download the drivers from VMware download page and install it manually. Dell recommends to upgrade from Dell customized VMware ESXi 4.x to ESXi 5.0 using latest Dell customized VMware ESXi 5.0 image.

**Fig4**: Screen capture taken during migration from Dell Customized VMware ESXi 4.1 update1 to VMware provided ESXi 5.0 - Warning message shown during upgrade

- **Scenario 4: Migration from Dell Customized 4.1 Update1 to Dell customized VMware ESXi 5.0:-**

In this case also, you will see the option 'Force Migrate' (Refer **Fig5**). This is due to the absence of a couple of drivers in VMware provided ESXi 5.0 compared to VMware provided ESXi 4.1 Update1. VMware provided ESXi 4.1 Update 1 (onwards) image includes the 3ware SCSI driver (3w-9xxx) and Neterion (NIC) vxge drivers (Refer **Fig6**). These are not Dell added drivers. Vxge driver is deprecated from 5.0 onwards. 3w-9xxx is not available in VMware provided/Dell Customized VMware ESXi 5.0 by default. Refer http://www.vmware.com/support/vsphere5/doc/vsphere-update-manager-50-release-notes.html for more details. Dell recommends doing a 'Force Migrate' in this case.

ESXi Found
The selected storage device contains an upgradable installation of ESXi. Choose whether to install or to upgrade ESXi.
* Your system has custom VIBs (shown on next screen). Proceeding with migration could cause it to not boot, experience instability, or needed features may not be present. You can use ImageBuilder to create an ISO with VIBs that replace your custom VIBs.
(X) Install
( ) Force Migrate *
Use the arrow keys and spacebar to select an option.
(Esc) Cancel
(Enter) OK

**Fig5:** Screen capture taken during migration from Dell Customized VMware ESXi 4.1 Update1 to Dell Customized VMware ESXi 5.0

**Fig6**: Screen capture taken during migration from Dell Customized VMware ESXi 4.1 Update1 to Dell Customized VMware ESXi 5.0 - Warning message during upgrade

Dell recommends doing a 'Force Migrate' in this case as this upgrade method will not remove any functionality if you don't have peripherals which make use of 'vxge' and 3ware SCSI driver. Also note that Dell doesn't support the peripherals which support these drivers.

## Dell OpenManage

Dell OpenManage software is a suite of system management applications for managing Dell PowerEdge servers. This software enables you to manage your systems with proactive monitoring, diagnosis, notification, remote access etc. Here we discuss about how openmanage component is taken care of during migration. Here we consider two cases where openmanage comes into picture during/after migration:-

- On VMware ESX classic servers the OpenManage server administrator components gets installed onto the service console of the system. From ESXi 5.0 onwards, Service Console (COS) is no longer available. During migration, the COS gets removed along with applications which are part of COS. Hence after migration you need to reinstall the OpenManage application by following the procedure documented at Dell support site. Dell uses VMware's VIB (vSphere Installation Bundle) mechanism to install Dell OpenManage Server Administrator agent in ESXi

- Considering the case where you migrate from an ESXi 4.1.x/4.0.x server which has Open Manage component configured, to Dell Customized VMware ESXi 5.0, here also you need to reinstall OpenManage again as the migration removes the OEM extensions from the system. Also Dell Customized VMware ESXi 5.0 doesn't carry the OpenManage component as mentioned earlier. Download the OpenManage VIB supported for ESXi 5.0 from Dell support site and follow the instructions to install the same.

## Licensing

Dell Customized VMware ESXi 4.x/4.0.x Embedded Edition consists of a Stand Alone License (SAL) key embedded in it. When migrating to ESXi 5.0 using Dell Customized VMware ESXi 5.0 build, the license mode is to set to Stand Alone Edition as the Dell Customized ESXi image carries the license key for 5.0. However, if you migrate to ESXi 5.0 using VMware provided ESXi 5.0 image, the license mode is set to 'Evaluation'. This is because the license which is embedded in the 4.x image is removed during migration. Since the VMware provided image doesn't carry any license keys, the license mode is set to 'Evaluation'. Note that evaluation will get expired in 60 days after install/migration.

## Summary

Dell recommends using Dell Customized VMware ESXi images as it contains updated driver versions and providers compared to what available in VMware provided ESXi images. The main advantage of using the Dell customized image is that it carries the updated drivers as part of the Installation CD. However, customers can further update the driver versions based on the requirement and availability at the VMware website.